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i2 SUMMIT

THE REDUCTION IN MICROVASCULAR RESISTANCE FOLLOWING PCI IN THE ADJACENT VESSEL TERRITORY IS NOT RELATED TO COLLATERAL FLOW INDEX.

i2 Poster Contributions
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Background: Coronary stenosis in one vessel may affect the haemodynamics of flow in the adjacent vessel bed. The microvascular changes and particularly the role of collaterals has recived little attention in the adjacent vessel bed.

Methods: We measured the index of microvascular resistance(IMR) in the target vessel and a reference vessel (either left anterior descending or circumflex artery) using the thermodilution technique and a pressure wire in patients with stable angina and single vessel disease. IMR was calculated at maximal hyperaemia during intravenous infusion of adenosine at 140µg/kg/min. Fractional flow reserve (FFR) and coronary flow reserve (CFR) were also recorded in both vessels before and after PCI. Pressure derived collateral flow index(CFI) was measured in the vessel undergoing PCI. Data is presented as mean +/- SEM. Statistical analysis was performed using paired t-test and linear regression.

Results: 29 patients were included in the study, mean age 60.4. FFR increased in the target vessel (0.63 +/- 0.02 vs 0.90 +/- 0.01 $p<0.001$). The CFR increased in the target vessel in response to PCI. (1.88 +/-0.23 vs 2.52 +/- 0.22 $p=0.03$). There was no significant change in CFR post PCI in the reference vessel (2.88 +/- 0.27 vs 2.60 +/-0.22 $p=0.25$). IMR reduced in response to PCI in the target vessel (28.28+/- 3.35 vs 19.79+/- 1.91 $p<0.01$) and the reference vessel (26.78 +/-2.39vs 21.16+/-2.13 $p<0.01$). There was no correlation between CFI and the % change in IMR in response to angioplasty in either target (R= -0.09 $p=0.62$) or reference vessel.(r=-0.09 $p=0.64$)

Conclusions: There is a reduction of IMR in both the target vessel and the adjacent reference vessel. Although the reduction in IMR would be expected in the target vessel due to an increase in flow, the reduction of IMR in the reference vessel is intriguing. One of the potential mechanisms which would allow for a reduction in IMR in the reference vessel following PCI is the function of collateral vessels, however since no correlation was seen between CFI and % change in IMR It is more likely another mechanism is responsible.